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Cap. 2

National Cooperative Dairy Herd Improvement Program



A plan for every size herd

OFFICIAL DHIA

OWNER SAMPLER

WEIGH-A-DAY-A-MONTH

AGRICULTURAL RESEARCH SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Dairy-Herd-Improvement Letter

ARS-44-213
(Vol. 45, No. 2)

May 1969

ARTIFICIAL INSEMINATION (AI) PARTICIPATION REPORT FOR THE UNITED STATES 1969 1/

A total of 7,933,878 cows were bred artificially in the United States in 1968. Of these, 7,138,636 were dairy cows and 795,242 were beef cows. This represented an increase of 90,278 dairy cows and 122,423 beef cows from the previous year. Also, for the first time over one-half of the Nation's dairy cows and heifers were bred artificially.

Semen from dairy bulls was used to inseminate 6,423,786 dairy cows. Semen from beef bulls was used to inseminate 1,510,092 beef and dairy cows.

It is likely that the total number of artificial inseminations to dairy and beef cows reported is below the true number of AI services. This occurred mainly because it was not possible to obtain reports from two organizations. Also, information on custom freezing by organizations and individuals that are not members of the National Association of Animal Breeders was not available.

1/ Prepared by B. T. McDaniel, F. N. Dickinson, C. A. Rampendahl, and J. J. Corbin from data supplied by artificial insemination organizations, State Extension Dairymen, and the National Association of Animal Breeders.

APR 13 '77

Issued August 1969

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Because of incomplete reporting and the lack of information, the tabular data in this report are partly estimations. Where possible, estimates were based on the averages and percentages from complete reports. When only the number of ampules of semen used were available, the number of first services was estimated to be one-half of the number of ampules reported.

Table 1 shows that 50.5 percent of the Nation's 14,123,000 dairy cows and heifers were artificially inseminated in 1968. Approximately 12.5 percent, or 892,609, of the dairy cattle so bred were registered. The number of dairy animals bred to beef bulls dropped for the fifth consecutive year. About 2.2 percent of the Nation's beef cows and heifers were artificially inseminated in 1968.

The top 10 States in number and percentage of dairy and beef cows bred artificially are shown in table 2. Wisconsin had the highest number of dairy cows inseminated, and Montana the highest number of beef cows.

The scope of artificial insemination by State for the years 1967 and 1968 is shown in table 3. The greatest increase in the number of dairy cows bred occurred in California, and Ohio had the greatest advance in beef cows.

The number of cows bred artificially in the United States since 1939 is shown by year in table 4. The continual upward trend in the percentage of dairy cattle bred artificially is illustrated in figure 1. The trend in beef cattle since reporting was commenced in 1963 is shown in figure 2.

Table 5 shows that 30 organizations bred cows artificially in 1968. These organizations serviced an estimated 407,375 herds. However, it should be noted that a herd was counted more than once when two or more AI studs bred cows in the same herd. In addition to the 7,489,889 cattle serviced directly, it is estimated that 413,401 cows were bred by semen sold to individual farmers by the studs, and that 30,588 cows were bred by semen custom-frozen.

TABLE 1.--Status of artificial breeding in the United States, January 1, 1969

| State and other sources | Studs ^{1/} | Bred to dairy sires in 1968 | | Bred to beef sires in 1968 | | Dairy cattle | | Beef cattle | |
|--|---------------------|-------------------------------------|------------------|----------------------------|-----------|----------------------------------|--|--|---|
| | | Registered dairy cows ^{2/} | Total dairy cows | Dairy cows | Beef cows | All U.S. milk cows ^{3/} | Dairy cows bred as a percentage of all milk cows ^{4/} | Other U.S. cattle and calves 2 years and older ^{5/} | Beef cows bred as a percentage of other cattle and calves ^{6/} |
| | | Number | Number | Number | Number | Thousands | Percent | Thousands | Percent |
| Alabama----- | 0 | 4,827 | 36,901 | 6,100 | 6,263 | 156 | 27.6 | 903 | 0.7 |
| Alaska----- | 1 | 60 | 999 | 15 | 46 | 1.9 | 53.4 | 2,5 | 1.8 |
| Arizona----- | 0 | 2,275 | 15,876 | 1,830 | 1,415 | 55 | 32.2 | 367 | .4 |
| Arkansas----- | 0 | 2,751 | 22,949 | 4,964 | 6,255 | 109 | 25.6 | 879 | .7 |
| California----- | 2 | 42,215 | 441,128 | 20,517 | 20,097 | 848 | 54.4 | 993 | 2.0 |
| Colorado----- | 1 | 3,337 | 36,644 | 2,496 | 11,305 | 110 | 35.6 | 995 | 1.1 |
| Connecticut----- | 0 | 10,724 | 45,593 | 7,193 | 968 | 73 | 72.3 | 4 | 24.2 |
| Delaware----- | 0 | 2,532 | 7,804 | 1,297 | 85 | 16 | 56.9 | 5 | 1.7 |
| Florida----- | 0 | 13,852 | 134,632 | 19,065 | 18,295 | 189 | 81.3 | 893 | 2.0 |
| Georgia----- | 0 | 18,445 | 51,285 | 6,740 | 6,279 | 152 | 38.2 | 811 | .8 |
| Hawaii----- | 0 | 1,587 | 11,100 | ----- | 974 | 15 | 74.0 | 92 | 1.1 |
| Idaho----- | 0 | 6,668 | 81,465 | 6,822 | 11,706 | 171 | 51.6 | 564 | 2.1 |
| Illinois----- | 1 | 27,735 | 162,720 | 21,669 | 19,464 | 363 | 50.8 | 795 | 2.4 |
| Indiana----- | 0 | 15,674 | 98,164 | 12,243 | 15,164 | 274 | 40.3 | 406 | 3.7 |
| Iowa----- | 0 | 18,448 | 201,096 | 33,244 | 17,800 | 605 | 38.7 | 1,405 | 1.3 |
| Kansas----- | 1 | 8,974 | 77,813 | 6,722 | 43,900 | 225 | 37.6 | 1,710 | 2.6 |
| Kentucky----- | 0 | 12,493 | 103,036 | 16,470 | 17,375 | 400 | 29.9 | 1,005 | 1.7 |
| Louisiana----- | 1 | 9,656 | 62,803 | 9,263 | 16,438 | 198 | 36.4 | 901 | 1.8 |
| Maine----- | 0 | 8,184 | 42,418 | 3,666 | 448 | 76 | 60.6 | 9 | 5.0 |
| Maryland----- | 1 | 11,832 | 75,755 | 8,583 | 3,484 | 184 | 45.8 | 54 | 6.5 |
| Massachusetts-- | 0 | 9,550 | 38,645 | 5,162 | 630 | 75 | 58.4 | 4 | 15.8 |
| Michigan----- | 2 | 39,114 | 253,375 | 28,907 | 8,735 | 499 | 56.6 | 123 | 7.1 |
| Minnesota----- | 1 | 35,145 | 526,823 | 68,292 | 19,017 | 1,146 | 51.9 | 530 | 3.6 |
| Mississippi----- | 1 | 5,424 | 47,155 | 2,772 | 6,578 | 233 | 21.4 | 1,235 | .5 |
| Missouri----- | 0 | 14,961 | 115,580 | 10,507 | 30,311 | 412 | 30.6 | 1,785 | 1.7 |
| Montana----- | 0 | 1,452 | 11,950 | 976 | 63,317 | 48 | 26.9 | 1,556 | 4.1 |
| Nebraska----- | 0 | 5,230 | 45,259 | 7,445 | 21,979 | 218 | 24.2 | 1,882 | 1.2 |
| Nevada----- | 0 | 725 | 6,735 | 120 | 2,608 | 15 | 45.7 | 311 | .8 |
| New Hampshire-- | 0 | 5,043 | 21,896 | 2,628 | 279 | 43 | 57.0 | 2 | 14.0 |
| New Jersey----- | 0 | 11,982 | 45,991 | 5,896 | 397 | 82 | 63.3 | 8 | 5.0 |
| New Mexico----- | 0 | 2,355 | 24,739 | 146 | 2,255 | 39 | 63.8 | 690 | .3 |
| New York----- | 1 | 127,452 | 655,571 | 65,830 | 4,310 | 1,132 | 63.7 | 57 | 7.6 |
| North Carolina----- | 1 | 15,018 | 81,561 | 11,156 | 7,053 | 211 | 43.9 | 333 | 2.1 |
| North Dakota----- | 0 | 1,640 | 25,614 | 1,737 | 20,003 | 168 | 16.3 | 948 | 2.1 |
| Ohio----- | 2 | 50,532 | 257,981 | 37,763 | 36,936 | 503 | 58.8 | 325 | 11.4 |
| Oklahoma----- | 0 | 3,376 | 26,858 | 3,612 | 10,624 | 166 | 18.4 | 2,070 | .5 |
| Oregon----- | 0 | 5,645 | 64,311 | 6,155 | 12,288 | 120 | 58.7 | 675 | 1.8 |
| Pennsylvania----- | 2 | 138,082 | 484,605 | 66,463 | 10,413 | 815 | 67.6 | 101 | 10.3 |
| Puerto Rico----- | 1 | 11,043 | 70,402 | 2 | 398 | ----- | ----- | ----- | ----- |
| Rhode Island----- | 0 | 1,063 | 4,551 | 551 | 98 | 8 | 63.8 | 1 | 9.8 |
| South Carolina----- | 0 | 4,622 | 29,686 | 5,776 | 2,955 | 76 | 46.7 | 256 | 1.2 |
| South Dakota----- | 0 | 2,550 | 29,648 | 3,544 | 24,738 | 214 | 15.5 | 1,686 | 1.5 |
| Tennessee----- | 3 | 8,536 | 76,138 | 15,211 | 12,344 | 352 | 26.0 | 922 | 1.3 |
| Texas----- | 0 | 6,265 | 96,467 | 2,932 | 40,575 | 374 | 26.6 | 5,517 | .7 |
| Utah----- | 1 | 4,767 | 53,027 | 3,803 | 4,379 | 82 | 69.3 | 329 | 1.3 |
| Vermont----- | 0 | 22,594 | 128,406 | 12,290 | 1,544 | 232 | 60.6 | 4 | 38.6 |
| Virginia----- | 1 | 12,825 | 105,965 | 14,041 | 4,618 | 253 | 47.4 | 484 | 1.0 |
| Washington----- | 2 | 11,932 | 135,615 | 11,256 | 15,453 | 200 | 73.4 | 370 | 4.2 |
| West Virginia----- | 0 | 2,459 | 18,734 | 4,945 | 2,708 | 72 | 32.9 | 196 | 1.4 |
| Wisconsin----- | 4 | 108,521 | 1,208,392 | 125,627 | 25,980 | 2,094 | 63.7 | 226 | 11.5 |
| Wyoming----- | 0 | 437 | 4,829 | 406 | 11,628 | 20 | 26.2 | 677 | 1.7 |
| Reported AI activity, but State unknown ^{7/} | - | ----- | 17,096 | ----- | 3,237 | ----- | ----- | ----- | ----- |
| Armour & Co. ^{8/} | - | ----- | ----- | ----- | 6,600 | ----- | ----- | ----- | ----- |
| International Beef Breeders ^{8/} | - | ----- | ----- | ----- | 45,690 | ----- | ----- | ----- | ----- |
| Semen services reported from ranchers' bulls ^{8/} | - | ----- | ----- | ----- | 116,803 | ----- | ----- | ----- | ----- |
| United States-- | 30 | 892,609 | 6,423,786 | 714,850 | 795,242 | 14,123 | 50.5 | 36,097 | 2.2 |

^{1/} States without studs purchase semen from studs in other States. See table 7 for names and addresses of studs.^{2/} Data for registered cows may have been all or partially estimated when incomplete report was given.^{3/} Preliminary figures for number of cows and heifers 2 years old and over kept for milk; estimated by the Statistical Reporting Service (USDA).^{4/} Percentage of all dairy cows bred included in the artificial insemination program.^{5/} Preliminary figures for other cattle and calves 2 years and older; estimated by the Statistical Reporting Service (USDA).^{6/} Percentage of all beef cows bred included in the artificial insemination program.^{7/} AI breeding activity reported for: Curtiss, 4,000 cows; Midwest Breeders, 503 cows; Select Sires, 15,830 cows. Total: 20,333 cows. Data were received from studs.^{8/} Information obtained from National Association of Animal Breeders, P.O. Box 1033, Columbia, Missouri 65201.

TABLE 2.--States with the highest number and percentage of dairy and beef cows bred artificially in 1968

| Rank | State | Cows bred artificially | | Rank | State | Cows bred artificially | |
|-------------------|--------------|------------------------|---------|------|-------|------------------------|---------|
| | | Number | Percent | | | Number | Percent |
| <u>DAIRY COWS</u> | | | | | | | |
| 1 | Wisconsin | 1,334,019 | 81.3 | | | | |
| 2 | New York | 721,401 | 74.0 | | | | |
| 3 | Minnesota | 595,115 | 73.4 | | | | |
| 4 | Pennsylvania | 551,068 | 72.3 | | | | |
| 5 | California | 461,645 | 69.3 | | | | |
| 6 | Ohio | 295,744 | 67.6 | | | | |
| 7 | Michigan | 282,282 | 63.8 | | | | |
| 8 | Iowa | 234,340 | 63.8 | | | | |
| 9 | Illinois | 184,389 | 63.7 | | | | |
| 10 | Florida | 153,697 | 63.7 | | | | |
| <u>BEEF COWS</u> | | | | | | | |
| 1 | Montana | 63,317 | 1 | | | | |
| 2 | Kansas | 43,900 | 2 | | | | |
| 3 | Texas | 40,575 | 3 | | | | |
| 4 | Ohio | 36,936 | 4 | | | | |
| 5 | Missouri | 30,311 | 5 | | | | |
| 6 | Wisconsin | 25,980 | 6 | | | | |
| 7 | South Dakota | 24,738 | 7 | | | | |
| 8 | Nebraska | 21,979 | 8 | | | | |
| 9 | California | 20,097 | 9 | | | | |
| 10 | North Dakota | 20,003 | 10 | | | | |

TABLE 3.--Comparison of artificial breeding in the United States for years 1967 and 1968

| State and other sources | Dairy cows bred artificially | | | | Beef cows bred artificially | | | |
|--|------------------------------|-----------|----------------------|-------------------------|-----------------------------|---------|----------------------|-------------------------|
| | In 1967 | In 1968 | Increase or decrease | Increase or decrease 1/ | In 1967 | In 1968 | Increase or decrease | Increase or decrease 2/ |
| | Number | Number | Number | Percent | Number | Number | Number | Percent |
| Alabama----- | 45,252 | 43,001 | -2,251 | +0.3 | 3,650 | 6,263 | +2,613 | +0.3 |
| Alaska----- | 1,189 | 1,014 | -175 | -6.1 | 9 | 46 | +37 | +1.4 |
| Arizona----- | 10,227 | 17,706 | +7,479 | +13.6 | 5,033 | 1,415 | -3,618 | -.9 |
| Arkansas----- | 23,417 | 27,913 | +4,496 | +5.1 | 4,264 | 6,255 | +1,991 | +2 |
| California----- | 391,970 | 461,645 | +69,675 | +8.7 | 19,014 | 20,097 | +1,083 | +1 |
| Colorado----- | 35,106 | 39,140 | +4,034 | +2.5 | 7,264 | 11,305 | +4,041 | +4 |
| Connecticut----- | 50,398 | 52,786 | +2,388 | +6.8 | 140 | 968 | +828 | +20.7 |
| Delaware----- | 9,052 | 9,101 | +49 | +3.7 | 94 | 85 | -9 | -.7 |
| Florida----- | 165,360 | 153,697 | -11,663 | -6.2 | 15,294 | 18,295 | +3,001 | +2 |
| Georgia----- | 61,663 | 58,025 | -3,638 | -1.6 | 5,862 | 6,279 | +417 | +1 |
| Hawaii----- | 10,647 | 11,100 | +453 | +7.5 | 1,480 | 974 | -506 | -.6 |
| Idaho----- | 64,022 | 88,287 | +24,265 | +13.0 | 9,353 | 11,706 | +2,353 | +3 |
| Illinois----- | 190,129 | 184,389 | -5,740 | -1.5 | 17,576 | 19,464 | +1,888 | +2 |
| Indiana----- | 110,530 | 110,407 | -123 | +1.5 | 12,870 | 15,164 | +2,294 | +7 |
| Iowa----- | 229,305 | 234,340 | +5,035 | +3.4 | 23,002 | 17,800 | -5,202 | -.4 |
| Kansas----- | 90,936 | 84,535 | -6,401 | -7.3 | 37,493 | 43,900 | +6,407 | +4 |
| Kentucky----- | 122,344 | 119,506 | -2,838 | +8 | 14,658 | 17,375 | +2,717 | +2 |
| Louisiana----- | 72,338 | 72,066 | -272 | +1.3 | 8,465 | 16,438 | +7,973 | +8 |
| Maine----- | 50,516 | 46,084 | -4,432 | -3.3 | 94 | 448 | +354 | +4.1 |
| Maryland----- | 84,640 | 84,338 | -302 | +.3 | 2,521 | 3,484 | +963 | +1.8 |
| Massachusetts--- | 46,803 | 43,807 | -2,996 | -.1 | 232 | 630 | +398 | +10.0 |
| Michigan----- | 295,272 | 282,282 | -12,990 | -.3 | 6,361 | 8,735 | +2,374 | +1.6 |
| Minnesota----- | 611,829 | 595,115 | -16,714 | +1 | 15,362 | 19,017 | +3,655 | +6 |
| Mississippi----- | 56,450 | 49,927 | -6,523 | -1.6 | 8,138 | 6,578 | -1,560 | -.2 |
| Missouri----- | 130,989 | 126,087 | -4,902 | +1 | 19,907 | 30,311 | +10,404 | +6 |
| Montana----- | 11,472 | 12,926 | +1,454 | +4.4 | 53,435 | 63,317 | +9,882 | +6 |
| Nebraska----- | 45,446 | 52,704 | +7,258 | +4.9 | 22,386 | 21,979 | -407 | +1 |
| Nevada----- | 5,076 | 6,855 | +1,779 | +11.9 | 2,109 | 2,608 | +499 | +1 |
| New Hampshire----- | 25,510 | 24,524 | -986 | +.3 | 155 | 279 | +124 | +6.2 |
| New Jersey----- | 57,315 | 51,887 | -5,428 | -.4 | 350 | 397 | +47 | 0 |
| New Mexico----- | 26,308 | 24,885 | -1,423 | -2.0 | 891 | 2,255 | +1,364 | +2 |
| New York----- | 727,478 | 721,401 | -6,077 | -1.6 | 2,895 | 4,310 | +1,415 | +2.2 |
| North Carolina-- | 93,038 | 92,717 | -321 | +.4 | 7,571 | 7,053 | -518 | -.3 |
| North Dakota----- | 19,781 | 27,351 | +7,570 | +5.5 | 19,999 | 20,003 | +4 | 0 |
| Ohio----- | 296,033 | 295,744 | -289 | +3.5 | 17,916 | 36,936 | +19,020 | +6.0 |
| Oklahoma----- | 20,194 | 30,470 | +10,276 | +6.6 | 12,137 | 10,624 | -1,513 | -.1 |
| Oregon----- | 65,553 | 70,466 | +4,913 | +6.7 | 10,637 | 12,288 | +1,651 | +2 |
| Pennsylvania----- | 535,335 | 551,068 | +15,733 | +2.6 | 10,120 | 10,413 | +293 | 0 |
| Puerto Rico----- | 59,607 | 70,404 | +10,797 | ---- | 200 | 398 | +198 | ---- |
| Rhode Island----- | 4,791 | 5,102 | +311 | +15.9 | 54 | 98 | +44 | +4.4 |
| South Carolina--- | 35,594 | 35,462 | -132 | +3.4 | 4,586 | 2,955 | -1,631 | -.7 |
| South Dakota----- | 33,882 | 33,192 | -690 | +4 | 16,135 | 24,738 | +8,603 | +5 |
| Tennessee----- | 102,460 | 91,349 | -11,111 | -1.3 | 8,832 | 12,344 | +3,512 | +3 |
| Texas----- | 98,481 | 99,399 | +918 | +2.3 | 36,437 | 40,575 | +4,138 | 0 |
| Utah----- | 52,398 | 56,830 | +4,432 | +4.6 | 4,549 | 4,379 | -170 | -.1 |
| Vermont----- | 128,136 | 140,696 | +12,560 | +6.3 | 398 | 1,544 | +1,146 | +28.6 |
| Virginia----- | 115,569 | 120,006 | +4,437 | +3.6 | 4,800 | 4,618 | -182 | 0 |
| Washington----- | 122,915 | 146,871 | +23,956 | +14.9 | 10,928 | 15,453 | -1,475 | -.2 |
| West Virginia----- | 24,288 | 23,679 | -609 | +1.4 | 2,531 | 2,708 | +177 | 0 |
| Wisconsin----- | 1,371,272 | 1,334,019 | -37,253 | -.2 | 20,799 | 25,980 | +5,181 | +1.5 |
| Wyoming----- | 5,842 | 5,235 | -607 | -.4 | 9,883 | 11,628 | +1,745 | +.3 |
| Reported AI activity, but State unknown ^{3/} | 4,200 | 17,096 | +12,896 | ---- | 16,329 | 3,237 | -13,092 | ---- |
| Armour & Co. ^{3/} | ----- | ----- | ----- | ----- | 4/23,658 | 6,600 | -17,058 | ---- |
| International Beef Breeders ^{3/} | ----- | ----- | ----- | ----- | 48,335 | 45,690 | -2,645 | ---- |
| Semen services reported from ranchers' bulls ^{3/} | ----- | ----- | ----- | ----- | 59,628 | 116,803 | +57,175 | ---- |
| United States--- | 7,048,358 | 7,138,636 | +90,278 | +2.4 | 4/672,819 | 795,242 | +122,423 | +.3 |

1/ Derived from all dairy cows bred in the artificial insemination program as a percentage of all milk cows in the United States.

2/ Derived from all beef cows bred in the artificial insemination program as a percentage of other cattle and calves 2 years and older in the United States.

3/ For year 1968 see table 1 and footnotes. For year 1967, see table 1 and footnotes in the May 1968 Dairy-Herd-Improvement Letter covering the Artificial Insemination Participation Report for 1967.

4/ Additional or revised data. See Errata and table 7 in the November 1968 Dairy-Herd-Improvement Letter for details.

TABLE 4.--Status of artificial breeding program in the United States, 1939-1969 inclusive

| Year | Studs | Sires in service | | | Average per stud | Herds ^{1/} | Dairy cows bred to- | | Beef cows bred to beef bulls | Total cattle bred | Cows bred per sire |
|------|-------|------------------|------|-------|------------------|---------------------|---------------------|--|------------------------------|-------------------|--------------------|
| | | Dairy | Beef | Total | | | Dairy bulls | Beef bulls | | | |
| 1939 | 7 | -- | -- | 33 | 4.7 | 646 | -- | -- | -- | 7,359 | 228 |
| 1940 | 25 | -- | -- | 138 | 5.5 | 2,971 | -- | -- | -- | 33,977 | 246 |
| 1941 | 35 | -- | -- | 237 | 6.8 | 5,997 | -- | -- | -- | 70,751 | 299 |
| 1942 | 46 | -- | -- | 412 | 9.0 | 12,118 | -- | -- | -- | 112,788 | 274 |
| 1943 | 59 | -- | -- | 574 | 9.7 | 23,448 | -- | -- | -- | 182,524 | 318 |
| 1944 | 56 | -- | -- | 657 | 11.7 | 28,627 | -- | -- | -- | 218,070 | 332 |
| 1945 | 67 | -- | -- | 729 | 10.9 | 43,998 | -- | -- | -- | 360,732 | 495 |
| 1946 | 78 | -- | -- | 900 | 11.5 | 73,293 | -- | -- | -- | 537,376 | 597 |
| 1947 | 84 | -- | -- | 1,453 | 17.3 | 140,571 | -- | -- | -- | 1,184,168 | 815 |
| 1948 | 91 | -- | -- | 1,745 | 19.2 | 224,493 | -- | -- | -- | 1,713,581 | 982 |
| 1949 | 90 | -- | -- | 1,940 | 21.6 | 316,177 | -- | -- | -- | 2,091,175 | 1,078 |
| 1950 | 97 | -- | -- | 2,104 | 21.7 | 409,300 | -- | -- | -- | 2,619,555 | 1,245 |
| 1951 | 94 | -- | -- | 2,187 | 23.3 | 548,300 | -- | -- | -- | 3,509,573 | 1,605 |
| 1952 | 94 | -- | -- | 2,324 | 24.7 | 671,100 | -- | -- | -- | 4,295,243 | 1,848 |
| 1953 | 96 | -- | -- | 2,598 | 27.1 | 755,000 | -- | -- | -- | 4,845,222 | 1,865 |
| 1954 | 93 | -- | -- | 2,661 | 28.6 | 805,000 | -- | -- | -- | 5,155,240 | 1,937 |
| 1955 | 79 | -- | -- | 2,440 | 31.0 | 845,900 | -- | -- | -- | 5,413,874 | 2,210 |
| 1956 | 79 | -- | -- | 2,553 | 32.3 | 900,400 | -- | -- | -- | 5,762,656 | 2,257 |
| 1957 | 75 | -- | -- | 2,651 | 35.3 | 946,000 | -- | -- | -- | 6,055,982 | 2,284 |
| 1958 | 71 | -- | -- | 2,676 | 37.7 | 975,372 | -- | -- | -- | 6,645,568 | 2,483 |
| 1959 | 64 | -- | -- | 2,460 | 38.4 | 930,059 | -- | -- | -- | 6,932,294 | 2,816 |
| 1960 | 62 | -- | -- | 2,544 | 41.0 | 910,000 | -- | -- | -- | 7,144,679 | 2,808 |
| 1961 | 56 | -- | -- | 2,486 | 44.4 | 863,781 | 7,047,148 | 2 ¹ / ₂ /435,492 | -- | 7,482,740 | 3,010 |
| 1962 | 56 | 2,036 | 420 | 2,456 | 43.9 | 862,150 | 6,837,681 | 2 ¹ / ₂ /911,006 | -- | 7,748,687 | 3,155 |
| 1963 | 51 | 2,158 | 401 | 2,559 | 50.2 | 621,141 | 6,468,545 | 969,748 | 235,289 | 7,673,582 | 2,999 |
| 1964 | 50 | 2,140 | 398 | 2,538 | 50.8 | 654,311 | 6,165,599 | 1,117,395 | 464,959 | 7,747,953 | 3,053 |
| 1965 | 3/46 | 1,867 | 449 | 2,316 | 50.3 | 591,859 | 6,301,178 | 963,657 | 615,147 | 7,879,982 | 3,402 |
| 1966 | 3/44 | 1,949 | 439 | 2,388 | 54.3 | 540,265 | 6,413,453 | 873,127 | 4/695,181 | 4/7,981,761 | 4/3,342 |
| 1967 | 35 | 2,012 | 364 | 2,376 | 67.9 | 438,782 | 6,259,425 | 788,933 | 4/672,819 | 5/4/7,871,265 | 4/3,313 |
| 1968 | 3/33 | 2,028 | 352 | 2,380 | 72.1 | 407,375 | 6,423,786 | 714,850 | 795,242 | 5/6/7,933,878 | 4/3,334 |
| 1969 | 3/30 | 1,955 | 390 | 2,345 | 78.2 | -- | -- | -- | -- | -- | -- |

^{1/} Prior to 1963, number of herds largely reflected membership rather than those actually serviced.^{2/} Probably includes some beef to beef inseminations.^{3/} Includes one all-beef stud.^{4/} Data are revised. See Errata and table 7 in the November 1968 Dairy-Herd-Improvement Letter for details.^{5/} Total cattle bred in 1967 includes 150,088 first services, by State only, where breakdowns were not reported.^{6/} Not shown are inseminations to 9,612 swine and 442 goats.

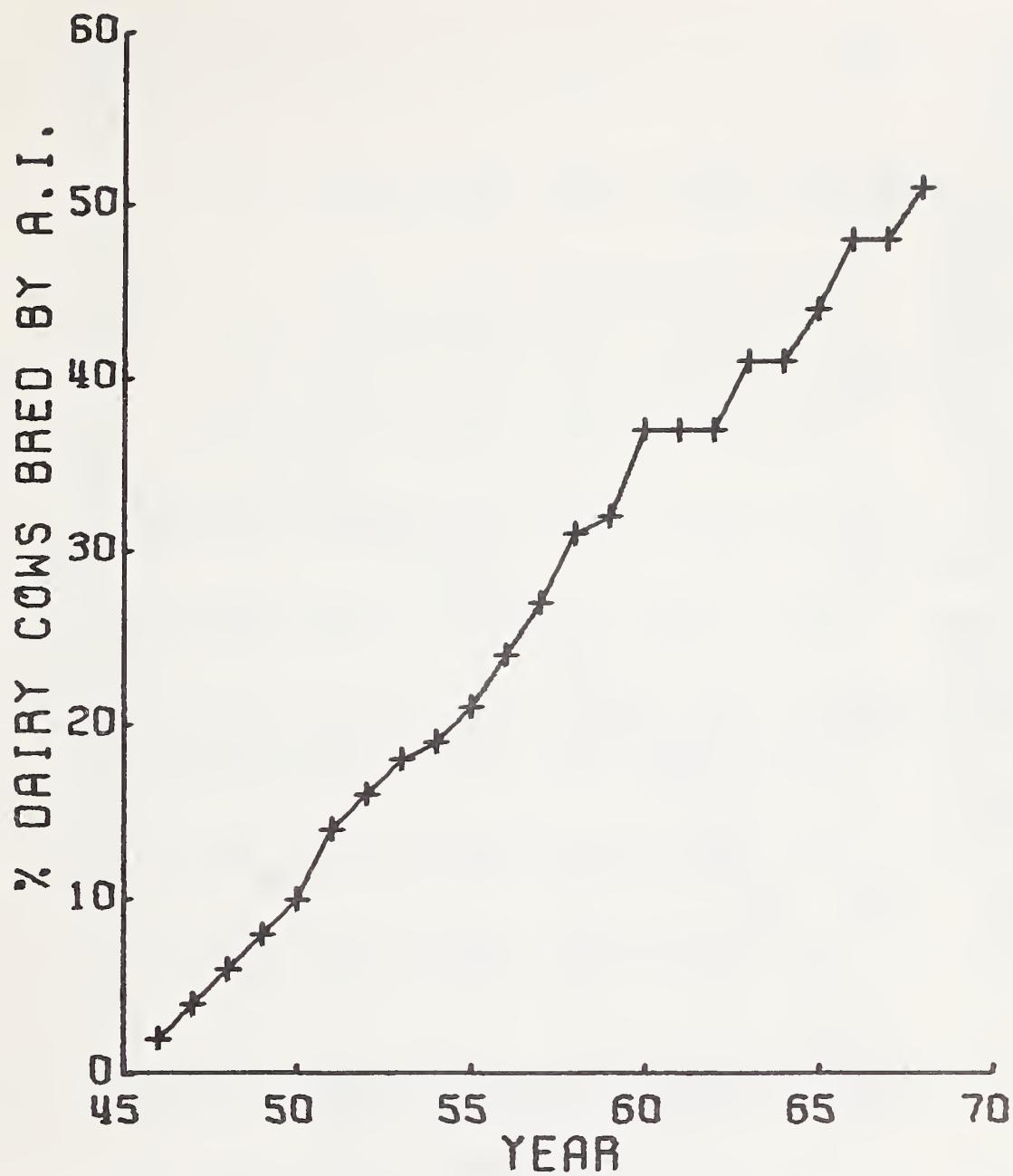


FIGURE 1.--Yearly trends in the percentage of U.S. dairy cows bred artificially since 1946.

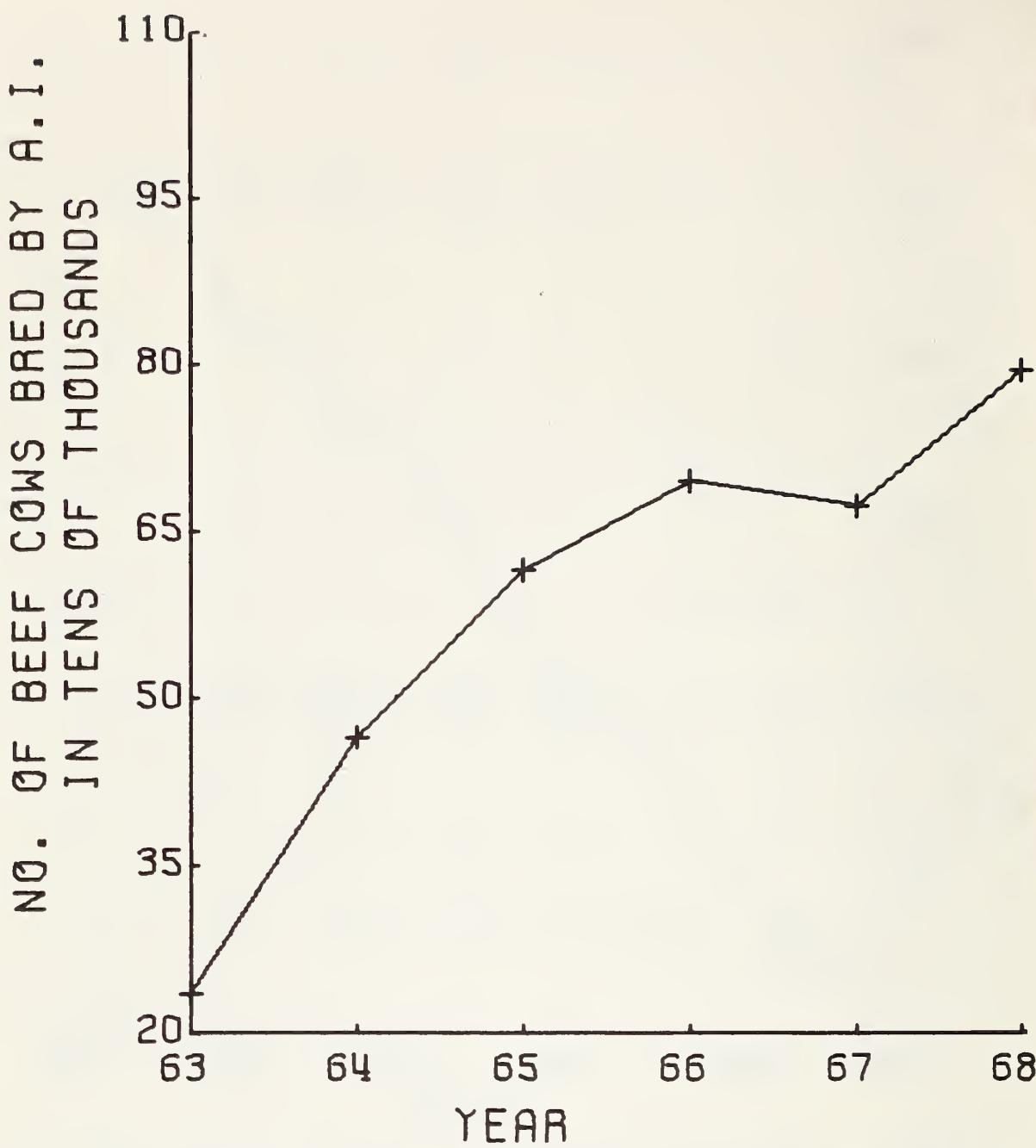


FIGURE 2.--Yearly trends in the number of U.S. beef cows bred artificially since 1963.

TABLE 5.--Cows bred in artificial-breeding organization bull studs during 1968

| Stud code | Name of stud ^{1/} | Herds serviced | Cows bred in 1968 | | | | Semen sales and custom-freezing services | Total breedings of-- | Estimated total number of cows bred | Inseminations of-- Swine Goats |
|--------------------|--------------------------------------|----------------|-------------------|---------------|--------------|----------------------|--|----------------------|-------------------------------------|--------------------------------|
| | | | Dairy total | Dairy to beef | Beef to beef | Total first services | | | | |
| Number | | | | | | | | | | |
| 2110 | Eastern AIC----- | 33,951 | 659,529 | 69,085 | 3,112 | 731,726 | 4,012 | 732,626 | 3,112 | 735,738 |
| 2309 | Atlantic----- | 13,251 | 190,882 | 25,835 | 5,815 | 222,532 | 200 | 216,917 | 5,855 | 222,772 |
| 2311 | NEBA----- | 2/9,355 | 154,806 | 21,980 | 1,165 | 177,751 | 2,394 | 178,980 | 1,165 | 180,145 |
| 3102 | NOBA----- | 10,477 | 213,185 | 39,167 | 10,315 | 262,667 | 11,854 | 264,206 | 26,618 | 290,824 |
| 3303 | Curtiss----- | 37,850 | 960,876 | 115,812 | 71,529 | 1,148,217 | 4,000 | 1,080,688 | 71,529 | 1,152,217 |
| 3401 | Michigan ABC----- | 13,140 | 167,765 | 19,896 | 4,127 | 191,788 | 1,355 | 189,016 | 4,127 | 193,143 |
| 3407 | General Genetics----- | 800 | 22,900 | 1,337 | 200 | 24,437 | 3,243 | 27,480 | 708 | 28,188 |
| 3503 | East Central----- | 4,500 | 76,166 | 13,226 | 500 | 89,892 | 5,971 | 95,363 | 500 | 95,863 |
| 3505 | Tri-State----- | 20,786 | 400,152 | ----- | 9,368 | 409,520 | ----- | 400,152 | 9,368 | 409,520 |
| 3521 | Midwest Breeders----- | 39,877 | 558,057 | 81,701 | 19,212 | 658,970 | 70,690 | 710,448 | 44,817 | 755,265 |
| 3575 | ABS----- | 2/81,844 | 1,246,139 | 112,905 | 195,935 | 1,554,979 | ----- | 1,359,044 | 195,935 | 1,554,979 |
| 4101 | Minnesota Valley----- | 31,540 | 256,637 | 36,408 | 3,973 | 297,018 | 1,040 | 11,920 | 294,085 | 15,893 |
| 4801 | Kansas ABSU----- | 2,604 | 38,294 | 2,560 | 11,870 | 55,724 | 4,187 | 26,853 | 4,041 | 38,723 |
| 5102 | Maryland-W. Va----- | 4,035 | 68,290 | 11,455 | 4,631 | 84,376 | 4,102 | 989 | 83,847 | 5,620 |
| 5201 | Virginia ABA----- | 6,751 | 65,531 | 10,134 | 1,788 | 77,453 | 3,833 | 553 | 79,498 | 2,341 |
| 5501 | N. C. Instit. B.P.-Select Sires----- | 10 | 926 | ----- | ----- | 926 | 45 | ----- | 971 | 971 |
| 6102 | East Tennessee----- | 37,797 | 250,980 | 43,904 | 31,476 | 326,260 | 102,960 | 37,877 | 397,744 | 69,353 |
| 6301 | 2/2,106 | 17,725 | 2/4,519 | 2/3,400 | 25,644 | ----- | ----- | 3,975 | 22,244 | 7,375 |
| 6302 | Tennessee ABA----- | 5,000 | 22,194 | 7,263 | 350 | 29,807 | ----- | ----- | 29,457 | 350 |
| 6303 | West Tennessee----- | 782 | 5,182 | 680 | 1,890 | 7,752 | ----- | ----- | 5,862 | 1,890 |
| 6502 | Mississippi ABC----- | 275 | 16,000 | 1,500 | 275 | 17,775 | 4,225 | 75 | 21,725 | 350 |
| 7201 | Louisiana ABC----- | 4,752 | 58,490 | 8,953 | 5,328 | 72,771 | 1,860 | 10,570 | 69,303 | 15,898 |
| 8701 | Cache Valley----- | 7,305 | 52,462 | 5,035 | 26,714 | 84,211 | 3,192 | 28,131 | 60,689 | 54,845 |
| 9111 | Carnation----- | 2/18,830 | 270,948 | 61,506 | 25,314 | 357,768 | ----- | ----- | 332,454 | 25,314 |
| 9113 | All West----- | 17,023 | 132,369 | 2/16,788 | 2/19,543 | 168,700 | ----- | ----- | 149,157 | 19,543 |
| 9303 | Excelsior----- | 201 | 35,226 | 200 | 40 | 35,466 | 18,196 | 275 | 53,622 | 315 |
| 9316 | Genetics, Inc.----- | 2,159 | 174,785 | 2,999 | 1,109 | 178,893 | 24,621 | 3,098 | 202,405 | 4,207 |
| 9401 | P.R. AI Center----- | 357 | 30,000 | 2 | 398 | 30,400 | 5,237 | ----- | 35,239 | 398 |
| 9601 | Matanuska Valley----- | 12 | 373 | ----- | ----- | 373 | ----- | ----- | 373 | 373 |
| 3310 | Armour & Co.3/----- | ----- | ----- | ----- | 6,600 | 6,600 | ----- | ----- | 6,600 | 6,600 |
| 8406 | International Beef Breeders 3/-3/ | ----- | ----- | ----- | 45,690 | 45,690 | ----- | ----- | 45,690 | 45,690 |
| Private services | ----- | ----- | ----- | ----- | 116,803 | 116,803 | ----- | ----- | 116,803 | 116,803 |
| United States----- | 407,375 | 6,146,569 | 714,850 | 628,470 | 7,489,889 | 277,217 | 166,772 | 7,138,636 | 795,242 | 7,933,878 |
| | | | | | | | | | | 9,612 |
| | | | | | | | | | | 442 |

^{1/} See table 7 for list of names and addresses of studs.^{2/} Data may have been all or partially estimated when incomplete report was given.^{3/} Information obtained from National Association of Animal Breeders, P.O. Box 1033, Columbia, Missouri 65201.

Three AI organizations reported that they artificially inseminated 9,612 swine, which is 1,657, or 20.8 percent, more than in 1967. Services to 442 goats were indicated, also an increase from 1967.

Table 6 shows that a total of 2,345 bulls were in AI studs in 1968. This probably exceeds the number of bulls actually used to inseminate cows in 1968, because it includes all bulls reported in studs at any time during the year. It was possible to remove bulls without services from the counts only when the stud reported an actual or estimated number of services by each bull.

The distribution of 1,955 dairy bulls by type of service and breed is shown in table 6. About 53 percent of the dairy bulls were available in regular service, 37 percent were involved in progeny testing only, and 7 percent were available only on a special service basis. Only 1,409 of the dairy bulls were reported as having semen available on January 1, 1969.. Most of the 390 beef bulls were reported as in regular service.

Semen from individual bulls is being more widely distributed throughout the country, as evidenced by the fact that 130 bulls were used by two or more studs.

Table 7 lists artificial-breeding organizations active in 1968.

Table 8 lists the States by percentage of dairy cows bred artificially in 1968.

An updated list of Extension Dairymen in charge of AI activity in each State is given on page 14.

TABLE 6.--Bulls used in artificial-breeding organization bull studs during 1968

| Stud code | Name of stud 1/ | Bulls by breed 2/ | | | | | | Type of service by dairy bulls | | | | | |
|--------------------|----------------------------------|-------------------|-------------|----------|----------|--------|----------|--------------------------------|------|-------|---------|---------------------------|-----------------|
| | | Ayr-shire | Brown Swiss | Guernsey | Holstein | Jersey | Red Dane | Short-horn | Beef | Total | Regular | Special or planned mating | Progeny testing |
| 2110 | Eastern AIC----- | 14 | 9 | 26 | 212 | 34 | -- | -- | 8 | 303 | 84 | -- | 211 |
| 2309 | Atlantic----- | 3 | 4 | 11 | 33 | 5 | -- | -- | 17 | 73 | 42 | 8 | 6 |
| 2311 | NEBA----- | 5 | 2 | 12 | 57 | 8 | -- | -- | 3 | 87 | 28 | 5 | 51 |
| 3102 | NOBA----- | -- | 4 | 13 | 34 | 20 | -- | -- | 21 | 92 | 67 | 4 | -- |
| 3303 | Curtiss----- | 6 | 6 | 14 | 97 | 14 | -- | 4 | 50 | 191 | 126 | 10 | 5 |
| 3401 | Michigan ABC----- | -- | 1 | 7 | 55 | 9 | 4 | 1 | 4 | 81 | 35 | 1 | 41 |
| 3407 | General Genetics----- | -- | -- | 4 | -- | -- | -- | -- | -- | 4 | -- | -- | -- |
| 3503 | East Central----- | -- | 1 | 1 | 27 | -- | -- | -- | 5 | 34 | 24 | 5 | -- |
| 3505 | Tri-State 3/----- | -- | 2 | 19 | 49 | 4 | -- | 2 | 15 | 91 | -- | -- | -- |
| 3521 | Midwest Breeders----- | -- | 4 | 11 | 80 | 3 | -- | 3 | 21 | 122 | 50 | 13 | 38 |
| 3575 | ABS----- | 5 | 5 | 12 | 262 | 17 | -- | 1 | 77 | 379 | 89 | 30 | 183 |
| 4101 | Minnesota Valley----- | 4 | 5 | 13 | 85 | 2 | -- | 5 | 20 | 134 | 108 | -- | 6 |
| 4801 | Kansas ABSU----- | 5 | 8 | 10 | 37 | 3 | -- | 2 | 6 | 71 | 45 | 4 | 16 |
| 5102 | Maryland W. Va----- | 6 | 3 | 10 | 29 | 6 | -- | -- | 7 | 61 | 29 | -- | 25 |
| 5201 | Virginia ABA----- | 1 | -- | 5 | 20 | 4 | -- | -- | 2 | 32 | 15 | 11 | 4 |
| 5501 | N.C. Instit. B.P.----- | -- | -- | 20 | -- | -- | -- | -- | -- | 20 | 2 | 7 | 11 |
| 6102 | Select Sires----- | 2 | 12 | 20 | 82 | 18 | -- | 3 | 21 | 158 | 58 | 3 | 76 |
| 6301 | East Tennessee----- | -- | 1 | 4 | 8 | 7 | -- | -- | 4 | 24 | 18 | 2 | -- |
| 6302 | Tennessee ABA----- | -- | 2 | 4 | 5 | 6 | -- | -- | 3 | 20 | 11 | 6 | -- |
| 6303 | West Tennessee----- | -- | -- | -- | 9 | 5 | -- | -- | 5 | 19 | 14 | -- | -- |
| 6502 | Mississippi ABC----- | -- | -- | -- | 1 | 5 | -- | -- | 2 | 8 | 6 | -- | -- |
| 7201 | Louisiana ABC----- | -- | -- | 6 | 10 | 7 | -- | -- | 10 | 33 | 8 | 3 | 12 |
| 8701 | Cache Valley----- | -- | 1 | 1 | 22 | 1 | -- | -- | 19 | 44 | 13 | -- | 12 |
| 9111 | Carnation----- | 1 | 4 | 8 | 39 | 5 | -- | 2 | 24 | 83 | 59 | -- | -- |
| 9113 | All West----- | -- | -- | 12 | 34 | 15 | -- | -- | 16 | 77 | .60 | 1 | -- |
| 9303 | Excelsior----- | -- | 1 | -- | 25 | -- | -- | -- | -- | 26 | 12 | 4 | 10 |
| 9316 | Genetics, Inc.----- | -- | -- | 3 | 24 | 5 | -- | -- | 2 | 34 | 13 | 8 | 11 |
| 9401 | P.R. AI Center----- | -- | -- | -- | 11 | -- | -- | -- | -- | 11 | 11 | -- | -- |
| 9601 | Matamuska Valley----- | -- | -- | -- | 5 | -- | -- | -- | -- | 5 | 3 | 2 | -- |
| ALL-BEEF STUD | | | | | | | | | | | | | |
| 8406 | International Beef Breeders----- | -- | -- | -- | -- | -- | -- | -- | -- | 28 | 28 | -- | -- |
| United States----- | | | | | | | | | | | | | |
| | | 52 | 75 | 222 | 1,376 | 203 | 4 | 23 | 390 | 2,345 | 1,030 | 127 | 718 |

1/ See table 7 for list of names and addresses of studs.

2/ These counts are based on where bulls are housed and do not reflect the fact that they are available to more than one stud.

3/ Based on report of January 1, 1968.

TABLE 7.--Artificial-breeding organization bull studs in the United States

| State | Stud code | Name and address |
|-----------------------|-----------|---|
| Alaska----- | 9601 | Matanuska Valley Breeders Association, Box AE, Palmer 99645. |
| California----- | 9303 | Excelsior Farms Artificial Breeding Service, Rt. 1, Box 128, Corona 91720. |
| | 9316 | Genetics, Inc., Box 134, Hughson 95326. |
| Illinois----- | 3303 | Curtiss Breeding Service, Inc., Cary 60013. |
| Kansas----- | 4801 | Kansas Artificial Breeding Service Unit, Kansas State University, Manhattan 66506. |
| Louisiana----- | 7201 | La. Animal Breeders Co-op., Inc., Louisiana State University, Box BD, Baton Rouge 70803. |
| Maryland----- | 5102 | Maryland-West Virginia Bull Stud, Inc., Box 555, Frederick 21701. |
| Michigan----- | 3407 | General Genetics, Box 23, Jenison 49428. |
| | 3401 | Michigan Animal Breeders Co-op., Inc., Box 511, East Lansing 48823. |
| Minnesota----- | 4101 | Minnesota Valley Breeders Association, New Prague 56071. |
| Mississippi----- | 6502 | Mississippi Animal Breeders Co-op., Drawer BA, State College 39762. |
| New York----- | 2110 | Eastern Artificial Insemination Co-op., Inc., Box 518, Ithaca 14850. |
| North Carolina--- | 5501 | N. C. Institutional Breeding Assoc., 231 Polk Hall, North Carolina State University, Raleigh 27607. |
| Ohio----- | 3102 | NOBA, Inc., Box 607, Tiffin 44883. |
| | 6102 | Select Sires, Inc., 1224 Alton-Darby Road, Columbus 43228. |
| Pennsylvania---- | 2309 | Atlantic Breeders Co-op., Box 254, Lancaster 17604. |
| | 2311 | Northeastern Breeders Assoc., Inc., R.D. 2, Tunkhannock 18657. |
| Puerto Rico----- | 9401 | Puerto Rico Artificial Insemination Center, Inc., Box 958, Dorado 00646. |
| Tennessee----- | 6301 | East Tennessee ABA, Rt. 10, Tipton Station Road, Knoxville 37920. |
| | 6302 | Tennessee Artificial Breeding Assoc., Granny White Pike, Box 67, Brentwood 37027. |
| | 6303 | West Tennessee ABA, Box 38, Yorkville 38389. |
| Utah----- | 8701 | Cache Valley Breeding Association, 1950 North Main, Logan 84321. |
| Virginia----- | 5201 | Virginia Animal Breeders Assoc., Inc., Drawer 370, Rocky Mount 24151. |
| Washington----- | 9113 | All West Breeders, Box 197, Burlington 98233. |
| | 9111 | Carnation Farms Breeding Service, Carnation 98014. |
| Wisconsin----- | 3575 | American Breeders Service, Inc., De Forest 53532. |
| | 3503 | East Central Breeders Association Co-op., Box 191, Highway 26, Waupun 53963. |
| | 3521 | Midwest Breeders Co-op., Box 469, Shawano 54166. |
| | 3505 | Tri-State Breeders Co-op., Rt. 3, Box 50, Baraboo 53913. |
| ALL-BEEF STUDS | | |
| Colorado----- | 8406 | International Beef Breeders, Inc., Box 29007, Denver 80229. |
| Illinois----- | 3310 | Armour & Co. Beef Cattle Improvement Research, Box 9222, Chicago 60690. |

TABLE 8.--Percentage of dairy cows bred artificially in 1968,
by States, in order of rank

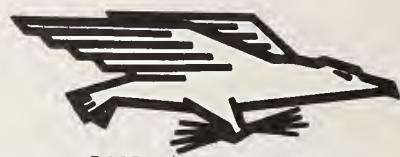
| State | Rank | State | Rank |
|--------------------|----------------|--------------------|----------------|
| | <u>Percent</u> | | <u>Percent</u> |
| Florida----- | 81.3 | South Carolina--- | 46.7 |
| Hawaii----- | 74.0 | Maryland----- | 45.8 |
| Washington----- | 73.4 | Nevada----- | 45.7 |
| Connecticut----- | 72.3 | North Carolina--- | 43.9 |
| Utah----- | 69.3 | Indiana----- | 40.3 |
| Pennsylvania----- | 67.6 | Iowa----- | 38.7 |
| New Mexico----- | 63.8 | Georgia----- | 38.2 |
| Rhode Island----- | 63.8 | Kansas----- | 37.6 |
| New York----- | 63.7 | Louisiana----- | 36.4 |
| Wisconsin----- | 63.7 | Colorado----- | 35.6 |
| New Jersey----- | 63.3 | West Virginia----- | 32.9 |
| Vermont----- | 60.6 | Arizona----- | 32.2 |
| Maine----- | 60.6 | Missouri----- | 30.6 |
| Ohio----- | 58.8 | Kentucky----- | 29.9 |
| Oregon----- | 58.7 | Alabama----- | 27.6 |
| Massachusetts----- | 58.4 | Montana----- | 26.9 |
| New Hampshire----- | 57.0 | Texas----- | 26.6 |
| Delaware----- | 56.9 | Wyoming----- | 26.2 |
| Michigan----- | 56.6 | Tennessee----- | 26.0 |
| California----- | 54.4 | Arkansas----- | 25.6 |
| Alaska----- | 53.4 | Nebraska----- | 24.2 |
| Minnesota----- | 51.9 | Mississippi----- | 21.4 |
| Idaho----- | 51.6 | Oklahoma----- | 18.4 |
| Illinois----- | 50.8 | North Dakota----- | 16.3 |
| Virginia----- | 47.4 | South Dakota----- | 15.5 |
| | | United States----- | 50.5 |

EXTENSION SERVICE OFFICIALS WORKING WITH DAIRY BREEDING ASSOCIATIONS IN THE STATES



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